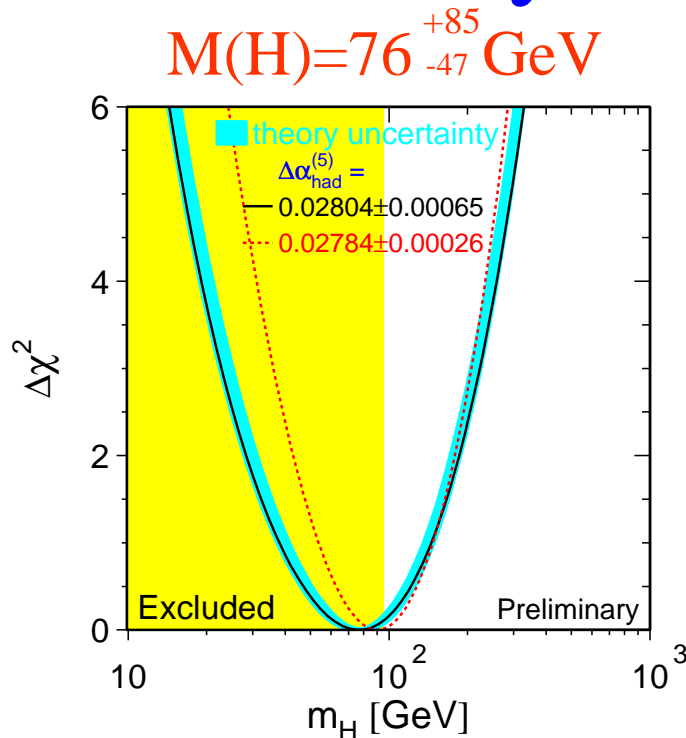
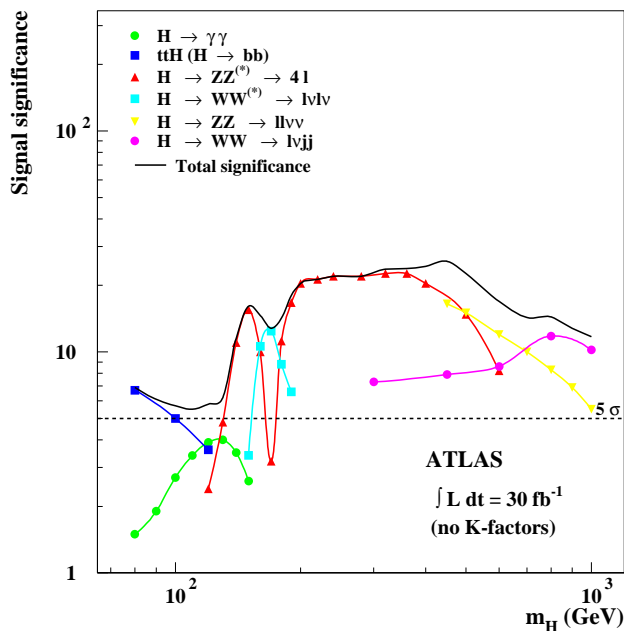


What if SM Higgs is very heavy?



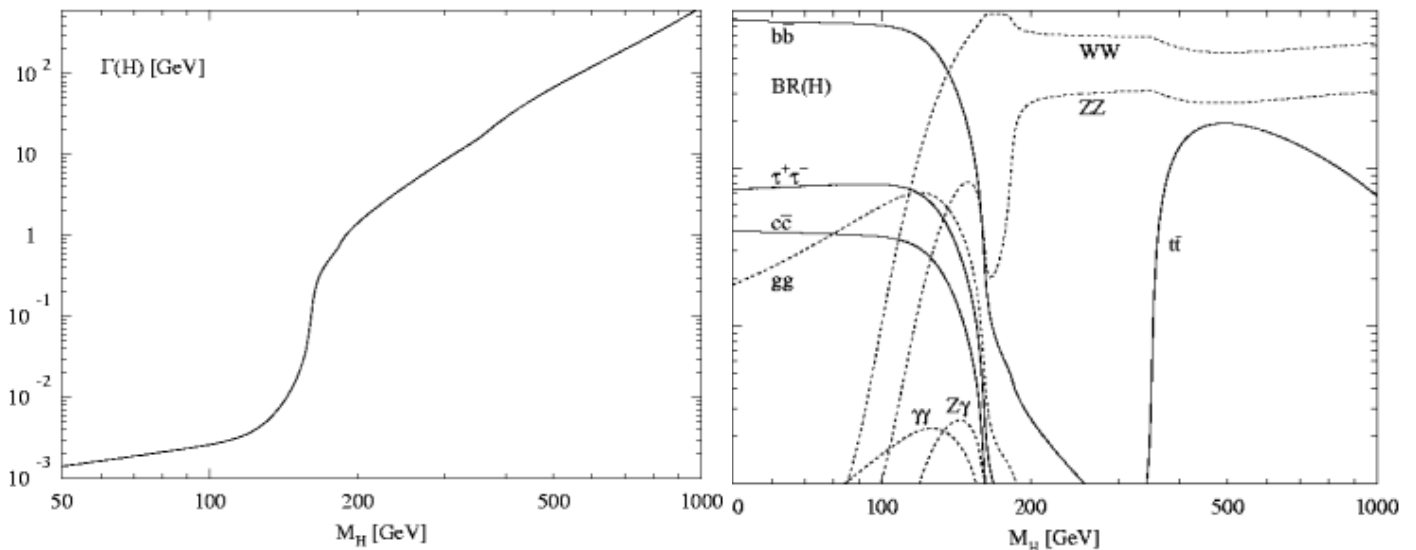
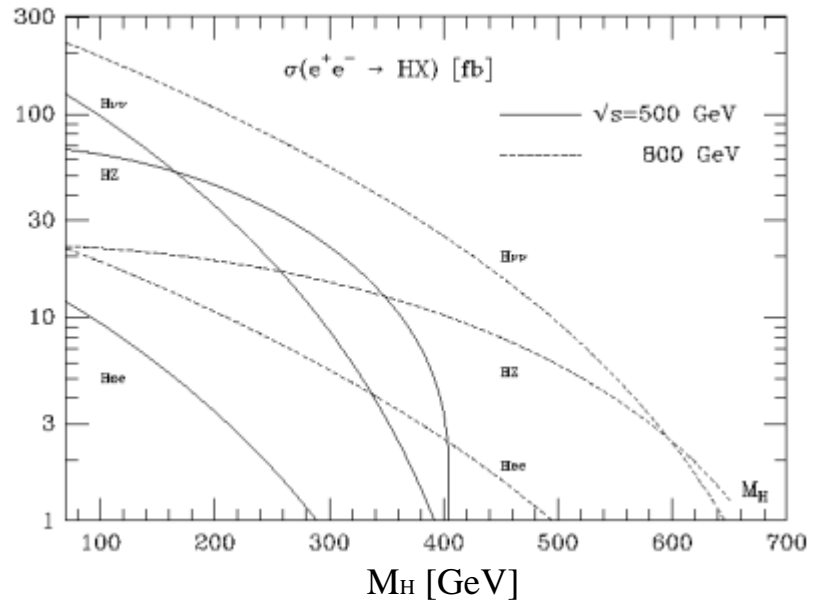
- Is $M(H) > M(tt)$ possible?
- If so, what will LHC know?
- What will LHC not know?
- What does a LC measure?
- What about non-SM Higgs?



LHC discovery reach to 1TeV
 (also true for MSSM)

Standard Model Higgs

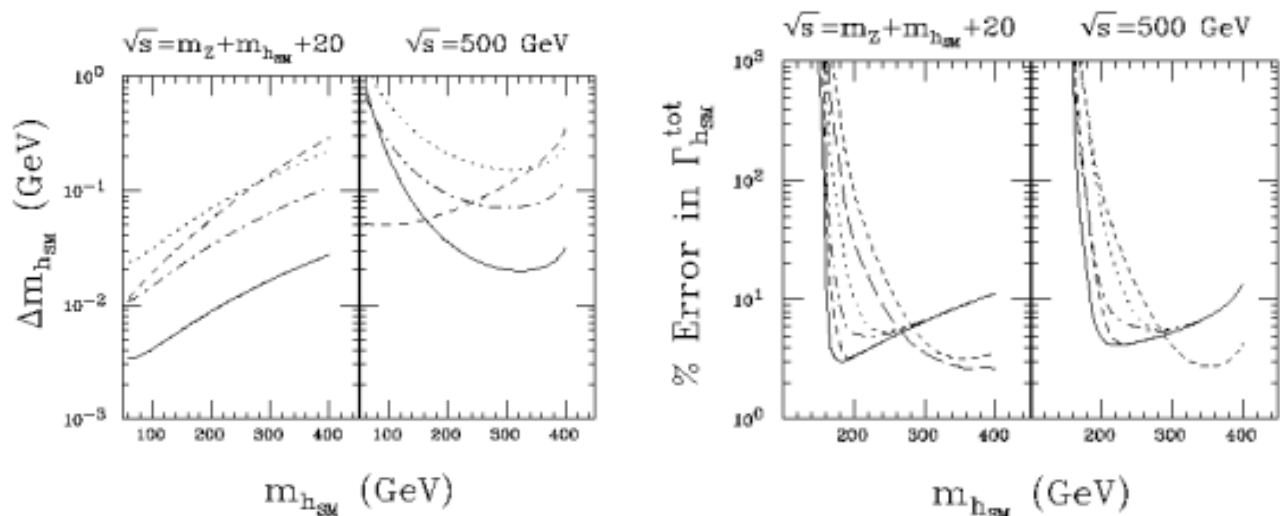
- Production -- Higgsstrahlung and WW fusion
- Width is large
- Decay -- 2/3 WW and 1/3 ZZ



Assume $M(\text{SM Higgs}) = 300 \text{ GeV}$

Gunion, et al, Snowmass '96, hep-ph/9703330

- LHC has a clean 4 lepton channel
 - Determination of total width to 4%
- LC measurement estimates mostly extrapolated from lower M_H studies
 - HZ and WW/ZZ can be separated
 - Detector performance can be important



$m_{h_{\text{SM}}}(\text{GeV})$	180	190	200	300
$(ZZh_{\text{SM}})^2$	$\pm 4\% - \pm 5\%$		$\pm 6\%$	$\pm 9\%$
$(WWh_{\text{SM}})^2$	$\pm 11\%$	$\pm 12\%$	$\pm 13\%$	$\pm 24\%$
$(ZZh_{\text{SM}})^2 / (WWh_{\text{SM}})^2$	$\pm 12\%$	$\pm 13\%$	$\pm 14\%$	$\pm 25\%$
$BR(h_{\text{SM}} \rightarrow WW)$	$\pm 6\%$	$\pm 7\%$	$\pm 8\%$	$\pm 14\%?$
$(\gamma\gamma h_{\text{SM}})^2$	$\pm 13\%$	$\pm 12\%$	$\pm 12\%$	$\pm 22\%$
$\Gamma_{h_{\text{SM}}}^{\text{tot}}$ (indirect)	$\pm 13\%$	$\pm 14\%$	$\pm 15\%$	$\pm 28\%$

Working Group Plans

- Call was to keep the focus narrow
- Option 1
 - Explore $m(H) > 350$ GeV
 - Consider ECM as a variable
 - Focus on unique contributions of LC
- Option 2
 - Consider heavy to be $m(H) > 200$ GeV
 - Focus on WW/ZZ modes in the range where the width changes
 - Especially consider case where $W \rightarrow \text{jets}$
- Option 3
 - Assume $m(H) > 350$ GeV
 - Focus on non-Higgs LC Physics
- Option 4
 - Focus on limited capabilities of the LC for a very heavy SM Higgs